

CLAIMS

1. 1. An elevator traction machine, comprising:

5 a driving unit for transmitting a driving force from a driving motor (100), including a driving shaft (101) of the driving motor (100) and a driven gear (10) having a first sun gear (12) formed at the other end of a driven shaft (11) coupled to the driving shaft (101);

10 a braking unit including a brake drum (102) in the form of a coupling for connecting the driving shaft (101) to one end of the driven shaft (11), and block brakes (103) for controlling a rotational motion while coming into close contact with an outer peripheral surface of the brake drum (102);

15 a reducer unit constructed such that a planetary gear (22) of each of one or more transmission gears (20) is rotated while being circumscribed and engaged with the first sun gear (12) of the driven gear (10), a second sun gear (52) of a fixed gear (50) is stationary in a state where it is circumscribed and engaged with a planetary pinion (23) of each of the transmission gears (20), and a spline (55) of the fixed gear (50) is fixedly inserted into a spline hole (87) formed at the center of a fixing cover (86) attached to a bracket (113);

20 a rotating unit including a flange (60) which a supporting shaft (51) of the fixed gear (50) penetrates through and is supported by at the center thereof and which a planetary gear shaft (21) of each of the transmission gears (20) penetrates through and is supported by at a circumferential portion with a radius (R) therein, a one-side cover (70) which the driven shaft (11) of the driven gear (10) penetrates through and is supported by and which one end of the planetary gear shaft (21) is inserted into and fixed to, and an other-side cover (80) which the other end of the supporting shaft (51) of the fixed gear (50) penetrates through and is fixed to and which the other end of the planetary gear shaft (21) is inserted into and fixed to, thereby rotating the covers (70, 80) as the planetary gear (22)

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revolves;

a sheave (90) which is formed to be coupled to an outer periphery of the flange (60) and of which an outer peripheral surface is provided with rope grooves (91) in which wire ropes are caught; and

5 a supporting unit for fixedly supporting the driving unit, the braking unit and the rotating unit with a plurality of brackets (111, 112, 113) and bearings (130 to 137).

2. An elevator traction machine, comprising:

a driving unit for transmitting a driving force from a driving motor (100),
10 including a driving shaft (101) of the driving motor (100) and a driven gear (10') having a first sun gear (12') formed at the other end of a driven shaft (11') coupled to the driving shaft (101);

a braking unit including a brake drum (102) in the form of a coupling for connecting the driving shaft (101) to one end of the driven shaft (11'), and block brakes
15 (103) for controlling a rotational motion while coming into close contact with an outer peripheral surface of the brake drum (102);

a reducer unit constructed such that a first planetary gear (32) of each of one or more first transmission gears (30) is rotated while being circumscribed and engaged with the first sun gear (12') of the driven gear (10'), a second planetary gear (42) of each of one
20 or more second transmission gears (40) is rotated while being circumscribed and engaged with a second planetary pinion (33) of each of the first transmission gears (30), a third sun gear (53) of a fixed gear (50') is stationary in a state where it is circumscribed and engaged with a third planetary pinion (43) of each of the second transmission gears (40), and a spline (55) of the fixed gear (50') is fixedly inserted into a spline hole (87) formed at the
25 center of a fixing cover (86) attached to a bracket (113);

a rotating unit including a flange (60') which a supporting shaft (51') of the fixed

gear (50') penetrates through and is supported by at the center thereof, which a first planetary gear shaft (31) of each of the first transmission gears (30) penetrates through and is supported by at a circumferential portion with a first radius (R1) therein, and which a second planetary gear shaft (41) of each of the second transmission gears (40) penetrates through and is supported by at a circumferential portion with a second radius (R2) therein, a one-side cover (70') which the driven shaft (11') of the driven gear (10') penetrates through and is supported by, which one end of the first planetary gear shaft (31) is inserted into and fixed to, and which one end of the second planetary gear shaft (41) is inserted into and fixed to, and an other-side cover (80') which the other end of the supporting shaft (51') of the fixed gear (50') penetrates through and is fixed to and which the other end of the second planetary gear shaft (41) is inserted into and fixed to, thereby rotating the covers (70', 80') as the planetary gears (32, 42) revolve;

a sheave (90') which is formed to be coupled to an outer periphery of the flange (60') and of which an outer peripheral surface is provided with rope grooves (91) in which wire ropes are caught; and

a supporting unit for fixedly supporting the driving unit, the braking unit and the rotating unit with a plurality of brackets (111, 112, 113) and bearings (130 to 133, 136', 137', 138, 151 to 154).

3. The elevator traction machine as claimed in claim 1, wherein an inward side of the cover (70) is formed on a circumference with the radius (R) with a planetary gear shaft recess (71) into which one end of the planetary gear shaft (21) is inserted, and at the center thereof with a driven-shaft hole (78) through which the one end of the driven shaft (11) penetrates; and an inward side of the cover (80) is formed on a circumference with the radius (R) with a planetary gear shaft recess (82) into which the other end of the planetary gear shaft (21) is inserted, and at the center thereof with a fixed-gear shaft hole (81)

through which the other end of the supporting shaft (51) penetrates.

4. The elevator traction machine as claimed in claim 2, wherein an inward side of the cover (70') is formed on circumferences with the first and second radii (R1, R2) with first and second planetary gear shaft recesses (72, 73) into which one ends of the first and second planetary gear shafts (31, 41) are inserted, and at the center thereof with a driven-shaft hole (78) through which the one end of the driven shaft (11') penetrates; and an inward side of the cover (80') is formed on a circumference with the second radius (R2) with a second planetary gear shaft recess (83) into which the other end of the second planetary gear shaft (41) is inserted, and at the center thereof with a fixed-gear shaft hole (81) through which the other end of the supporting shaft (51') of the fixed gear penetrates.

5. The elevator traction machine as claimed in claim 1 or 2, wherein the sheave (90; 90') is formed integrally with the outer periphery of the flange (60; 60').

6. The elevator traction machine as claimed in claim 1, wherein the planetary gear (22) is coupled to an outer peripheral surface of one side of the planetary gear shaft (21) by means of a key (24), and the planetary pinion (23) is formed on an outer peripheral surface of the other side of the planetary gear shaft.

7. The elevator traction machine as claimed in claim 2, wherein the first planetary gear (32) is coupled to an outer peripheral surface of one side of the first planetary gear shaft (31) by means of a key (34), and the second planetary pinion (33) is formed on an outer peripheral surface of the other side of the first planetary gear shaft; and the second planetary gear (42) is coupled to an outer peripheral surface of one side of the second planetary gear shaft (41) by means of a key (44), and the third planetary pinion (43) is

formed on an outer peripheral surface of the other side of the second planetary gear shaft.

8. The elevator traction machine as claimed in claim 1, wherein the planetary gear (22) is coupled to one side of the planetary gear shaft (21) of one of the transmission gears (20) by means of a power lock (25).

9. The elevator traction machine as claimed in claim 2, wherein the first planetary gear (32) is coupled to one side of the first planetary gear shaft (31) of one of the first transmission gears (30) by means of a power lock (35).

10. The elevator traction machine as claimed in claim 1 or 2, wherein the driven gear (10; 10'), the planetary gear(s) (20; 30, 40) and the fixed gear (50; 50') are formed of helical gears with a helix angle of 15 to 25 degrees.

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